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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,402	01/14/2004	Hiroshi Sato	NITT.0176	3502

7590 11/21/2005
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EXAMINER

UNELUS, ERNEST

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 11/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/756,402

Applicant(s)

SATO ET AL.

Examiner

Ernest Unelus

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 12 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>05/07/04, 01/14/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, and 5-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Oka et al. (US pat. 5,119,393).

With respect to claim 1, Oka discloses a wavelength tunable DBR laser diode comprising: an optical waveguide section (105) including an active section(103) (see fig. 1); and a distributed Bragg reflector connected optically to the optical waveguide section (see col. 6, lines 15-18); wherein an optical waveguide section (141) of the distributed Bragg reflector has a quantum well layer which has the number of one or more layers of periods and a structure independent of the optical waveguide section (105) including the active section and which is disposed at least at a section extending in a direction of an optical axis of the distributed Bragg reflector (see fig. 1), and the quantum well layer of the Bragg reflector has a function of amplifying an oscillation wave length of the wavelength tunable DBR laser diode (see col. 9, lines 19-44).

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With respect to claim 2, Oka discloses the optical waveguide section including the active section is optically connected to the distributed Bragg reflector by Butt-joint (see fig. 19D).

With respect to claim 3, Oka discloses a semiconductor optical amplifier that is further optically connected to one end of an optical waveguide structure having the distributed Bragg reflector and the optical waveguide including the active section (see col. 2, lines 15-24).

With respect to claim 5, Oka discloses a phase control section (102) is optically connected between the distributed Bragg reflector (101) and the optical waveguide section including the active section (103), and the quantum well layer which has the number of one or more layers of periods and a structure independent of the optical waveguide section including the active section and which is disposed at least at a portion or an entire portion of the distributed Bragg reflector and the phase control section (see fig. 1 and col. 6, lines 2-40).

With respect to claim 6, Oka discloses the distributed Bragg reflector (101) having a diffraction grating (112) (see fig. 1), which includes diffraction grating areas differing in period located in at least a portion of the diffraction grating (see col. 13, lines 12-15).

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With respect to claim 7, Oka discloses a wavelength tunable DBR laser diode, wherein optical waveguide sections each having a wavelength tunable DBR distributed Bragg reflector (801) and an optical waveguide section including an active section (803) optically connected to each other are disposed in parallel (see fig. 8), and one end of the distributed Bragg reflector is optically connected to one end of an optical combiner (813); and wherein Bragg reflector of one or more an optical waveguide section of the distributed has a quantum well layer which has the number layers of periods and a structure independent of the optical waveguide section including the active section and which is disposed at least at a section extending in a direction of an optical axis of the distributed Bragg reflector (col. 6, lines 2-40).

With respect to claim 8, Oka discloses a semiconductor optical amplifier is further connected optically to the other end of the optical combiner (813) (see col. 2, lines 18-22).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 4, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oka et al. (US pat. 5,119,393) in view of Tanaka et al. (US pat. 5,179,615).

With respect to claim 4, Oka discloses a wavelength tunable semiconductor laser that has an optical waveguide structure having the distributed Bragg reflector and an active section. Oka fails to disclose an optical modulator is further optically connected to one end of an optical waveguide structure having the distributed Bragg reflector and the optical waveguide including the active section. An optical modulator optically connected to one end of an optical waveguide structure having the distributed Bragg reflector and the optical waveguide including the active section is well taught by Tanaka (col. 11, lines 15-26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to optically connect the modulator to the device because it will allow control of the interference of optical beams between channels.

With respect to claims 9 and 10, Oka discloses a wavelength tunable semiconductor laser that has an optical waveguide structure having the distributed Bragg reflector and an active section. Oka fails to disclose a second DBR region, which are separated by a phase region. Tanaka discloses first (203a) and second (203b) tunable DBR laser diode according to distributed Bragg reflectors are disposed, respectively, on both sides of the optical waveguide section (12) including the active section (14), and each of the optical waveguide sections of the first and the second distributed Bragg reflector has a quantum well layer which has the number of one or

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more layers of periods and a structure independent of the optical waveguide section including the active section and which is disposed at least at a section extending in a direction of an optical axis of the distributed Bragg reflector (see fig. 9 and col. 9, lines 24-42). It would have been obvious to one of ordinary skill in the art at the time the invention was made to optically connected the two DBRs within the side of the phase control to independently control the injection wavelength by a separate tuning section.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Aoyagi et al. (US pat. 5,157,681) discloses a wavelength tunable semiconductor laser that has an optical waveguide structure having the distributed Bragg reflector and an active section without specifically disclosing a second DBR section connected to both side of a phase control section.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernest Unelus whose telephone number is 571-272-8596. The examiner can normally be reached on 9:00am to 5:00 pm.

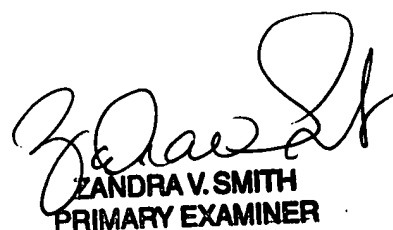
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

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applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

E.U



ZANDRA V. SMITH
PRIMARY EXAMINER